**Title: When Am I Ever Going To Use This?**
**Part 2: Linking Algebra to Temperature**

**Brief Overview:**

We are again trying to excite Algebra students with the use of technology. Students will access the USA Today website and use the weather information section to gather the average monthly temperatures for several cities. Students will then organize the data in tabular form and plot line graphs, which they will compare to graphs of algebraic equations. Students will then make connections to Earth Science by making conjectures as to why some cities have similar graphs while other cities are radically different.

**Link to Standards:**

- **Problem Solving** Students will use data to solve problems involving seasonal and climatic difference between cities.
- **Reasoning** Students will make conjectures based on collected Internet data and graphs generated from the data.
- **Statistics** Students will make a table of average monthly temperatures for several cities. The temperatures will then be placed in line graphs for interpretation.
- **Number Relationships** Students will use graphs to link the statistical data with algebraic equations.

**Grade/Level:**

Grades 9-12, Beginning Algebra

**Duration/Length:**

This activity will take one to four days.

**Prerequisite Knowledge:**

Students should have working knowledge of the following:

- Simple Internet navigation techniques
- How to plot points on a coordinate plane
- How to interpret a line graph
- Climate zones

**Objectives:**

Students will:

- work cooperatively in groups.
- collect and organize data from Internet sites.
- compare data graphs to algebraic graphs
- analyze graphs to support answers to Earth Science questions.

**Materials/Resources/Printed Materials:**

- Atlas and/or encyclopedia
- Pencils
- Paper
- Computer/Internet access
- Student Resources #1-13
- Teacher Resources #1-4

**Development/Procedures:**

- Teachers should preview the Internet site to make sure it still exists in the given format. Teachers should research alternative sites.

- Give students an address sheet (Student Resource #1). This will show them how to get to the appropriate web location and set a bookmark.

- Show students what data is to be collected and where to record it. (Student Resource #2).

- Show students how to graph data on given worksheets. (Student Resources #4-6)

- Use graphs to answer questions on Student Resources #7-13.

**Evaluation:**

Assessment will be based on observation of ability to retrieve Internet data as well as completed worksheets.

**Extension/Follow Up:**

Use the windchill calculator to find linear equations relating temperature and wind speed to wind chill temperature.

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**Source of Data:**

USA TODAY website
http://www.usatoday.com

Name_____

**Title: Linking Algebra to Temperature**: Student Resource #1

This lesson is intended to help you learn to:

1. Recall how to find a specific site on the Internet.
2. Make a bookmark for future reference.
3. Collect and data from this web site.
4. Plot the data on a coordinate plane
5. Analyze this data mathematically
6. Interpret this data by answering questions concerning Earth Science and Geography

## LET'S GET INTO THAT INTERNET

LOG ON

Go To USA TODAY by finding the address box at the **top** of the page and

By Typing

hppt://www.usatoday.com

(This is a direct way to get to a site you already know.)

You *Hit Enter* key

You See USA TODAY & today's headlines:_____
And a box at the top with (Fill in)

WEATHER

OR the word **WEATHER** in bold at the bottom

You *Click* on the WEATHER box at the top
OR *Click* on **WEATHER** at the bottom after you *Scroll Down*

You See USA TODAY WEATHER
You *Scroll down* until

You See INDEX (Click here for a complete guide to the weather section.)
You *Click*

You See A list of topics, so you find Links to detailed records 1995 1996
You *Click*

SR #2

You See Climate Weather Records
Climate for Travelers
brief summaries of weather averages
You *Click*

You See Integers
You *Scroll Down*

You make a BOOKMARK so you can always return to this page easily. ***HOW???***
You *Click*

..... Bookmarks.....

on the very top of the page on the toolbar.

You See The drop-down list
You *Click* on

Add Bookmark

and now you can always return to this page in USA TODAY by:

1. *Clicking* on Bookmark at the top toolbar.
2. *Highlighting* your "bookmarked" item in the drop-down list.
3. *Click Click* your item

Now you are on your own.

You must find the monthly high temperatures for all the specified cities on your chart.

# Monthly High Temperature Data

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Montreal | | | | | | | | | | | | |
| Wash. D.C. | | | | | | | | | | | | |
| Miami | | | | | | | | | | | | |
| Rio de Janeiro | | | | | | | | | | | | |
| Buenos Aires | | | | | | | | | | | | |

SR #3 Name_____

Locate approximate locations of our specified cities on this graph in a different color DOT and write the name close to the DOT on the map.

# Montreal

SR#4


# Washington D. C.

# Miami

SR#5


## Rio de Janeiro

SR#6


Buenos Aires
Temperatures
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

SR#7

Study questions for Temperature Lab

1. Approximate the average high temperature for Montreal during the month of April.

2. Where does the temperature vary the least?

3. Where does the temperature vary the most?

4. If it is 85 degrees in Washington, which temperature would be most appropriate for Buenos Aires?

   A. 10 degrees  B. 60 degrees  C. 80 degrees  D. 97 degrees

5. If it is 85 degrees in Buenos Aires, which temperature would be most appropriate for Washington?

   A. 20 degrees  B. 80 degrees  C. 43 degrees  D. 97 degrees

6. If it is 80 degrees in Washington, what temperature is it likely not to be in Rio de Janeiro?

   A. 20 degrees  B. 80 degrees  C. 77 degrees  D. 75 degree

7. Why are there differences in the temperature graphs for each city?

8. Why is Montreal's graph curving down while Buenos Aires' graph is curving up?

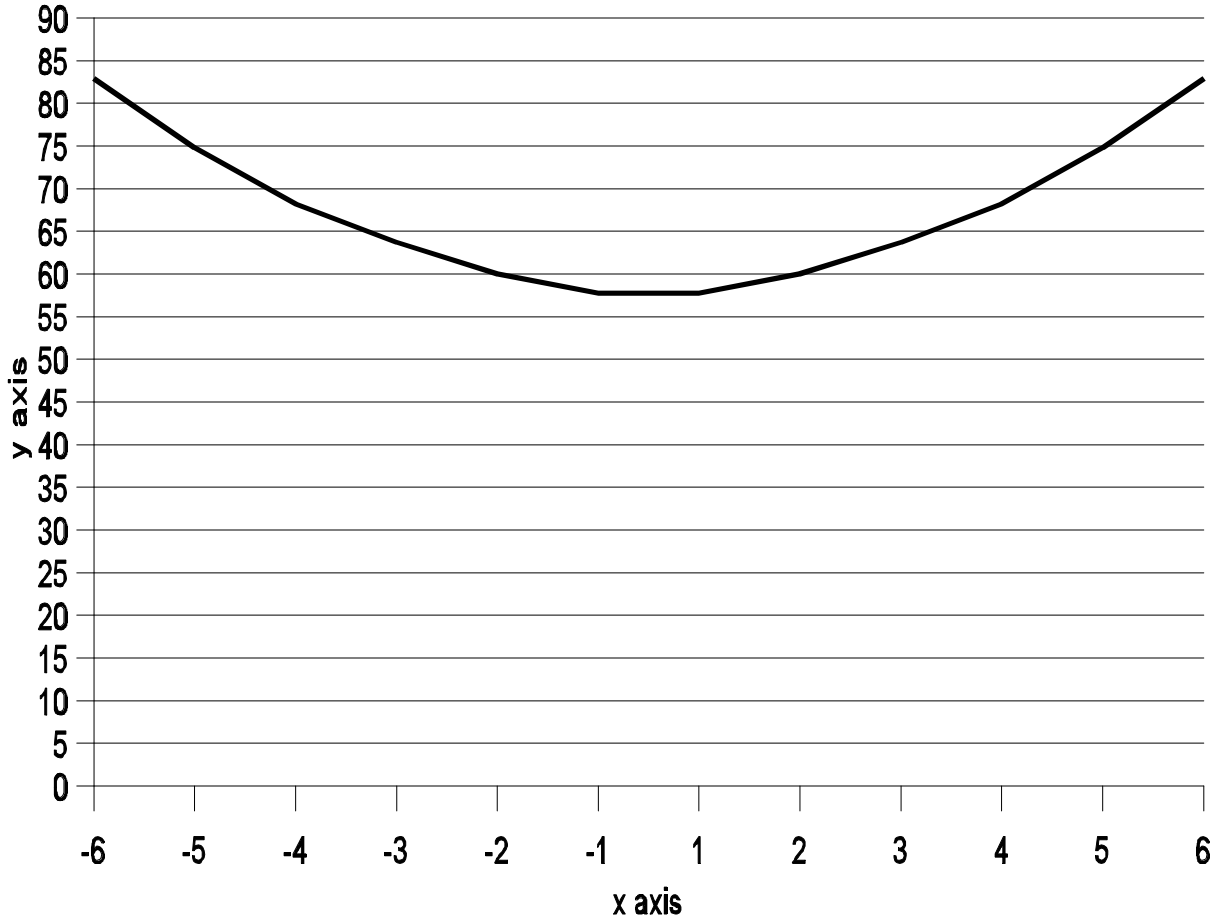
9. What is the relationship between latitude and temperature differences?

10. Which city's temperature graph would look the most like Washington's?

A. Anchorage B. Key West C. Paris D. Moscow

11. Why would someone need to know the weather in different cities?

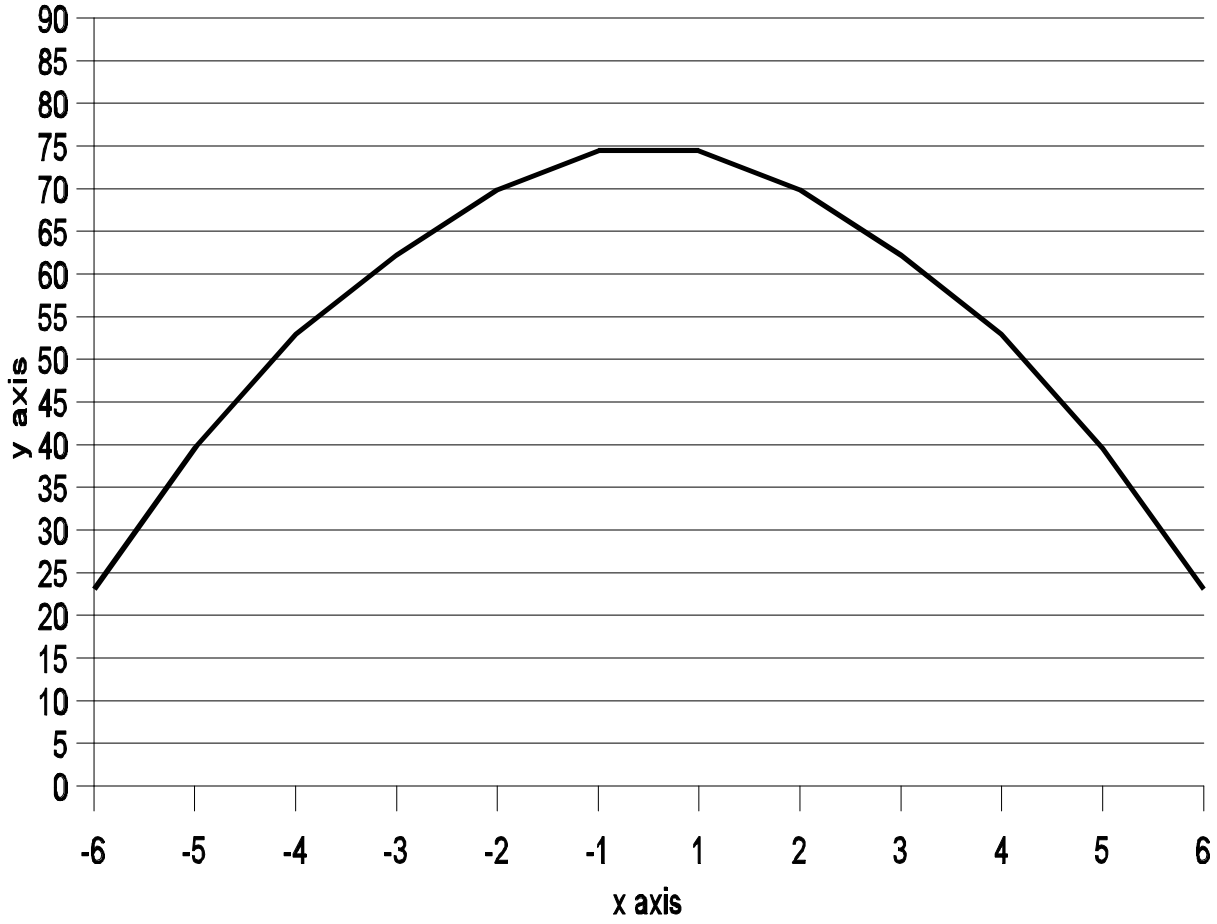
$$Y = .72x^2 + 57$$




12. Which city's temperature graph most closely resembles the algebraic equation graphed above?

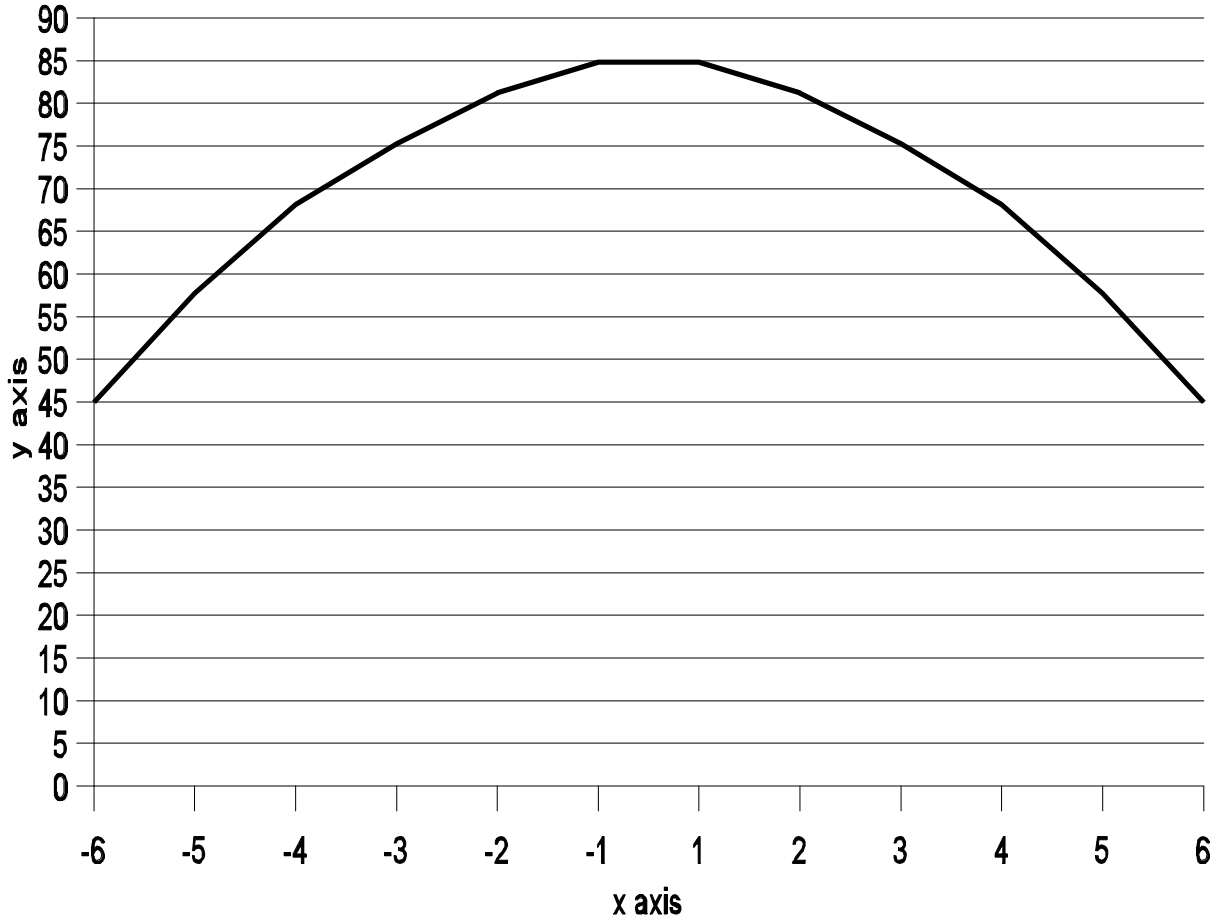
SR#10

$$Y = -1.47x^2 + 76$$



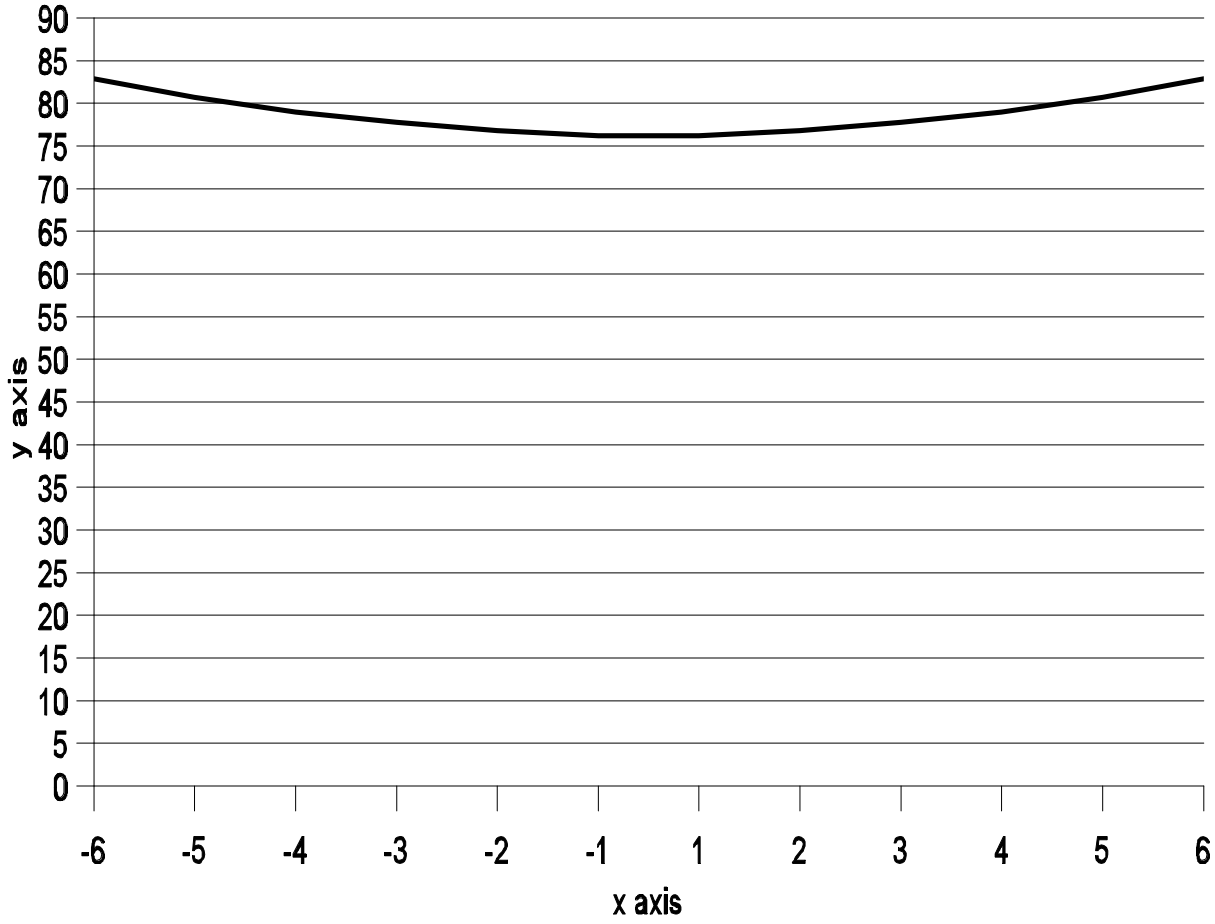

13. Which city's temperature graph most closely resembles the algebraic equation graphed above?

$$Y = -1.14x^2 + 86$$




14. Which city's temperature graph most closely resembles the algebraic equation graphed above?

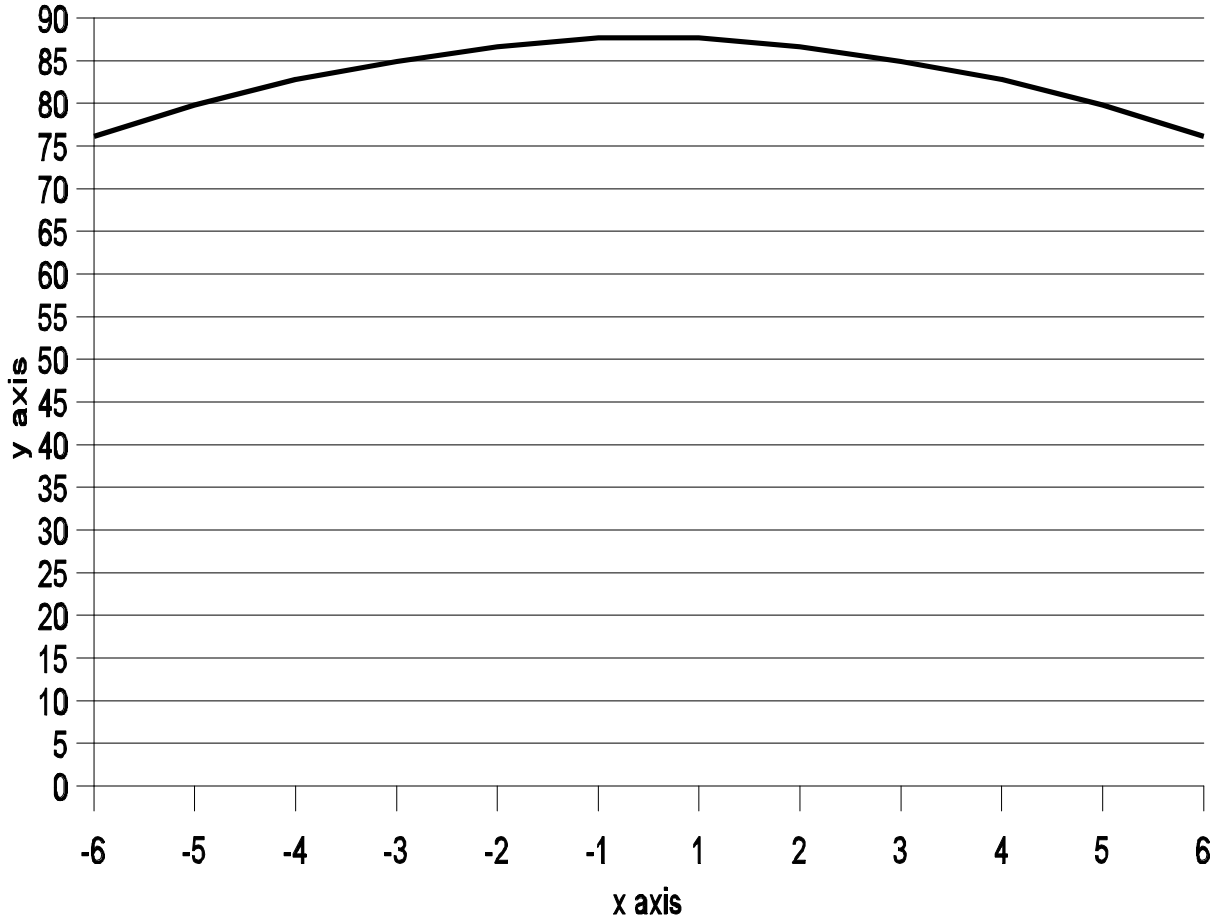
$$Y = .19x^2 + 76$$




15. Which city's temperature graph most closely resembles the algebraic equation graphed above?

SR#13

$$Y = -.33x^2 + 88$$

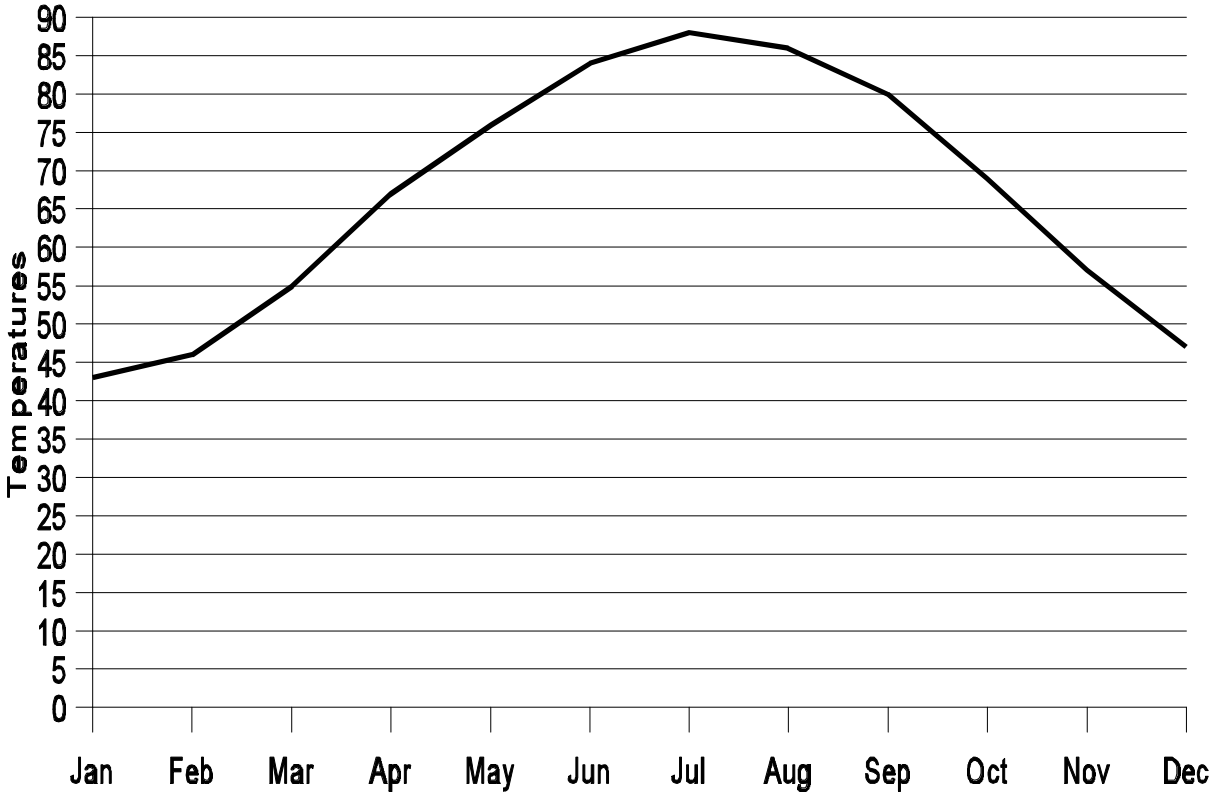



16. Which city's temperature graph most closely resembles the algebraic equation graphed above?

TR
#1

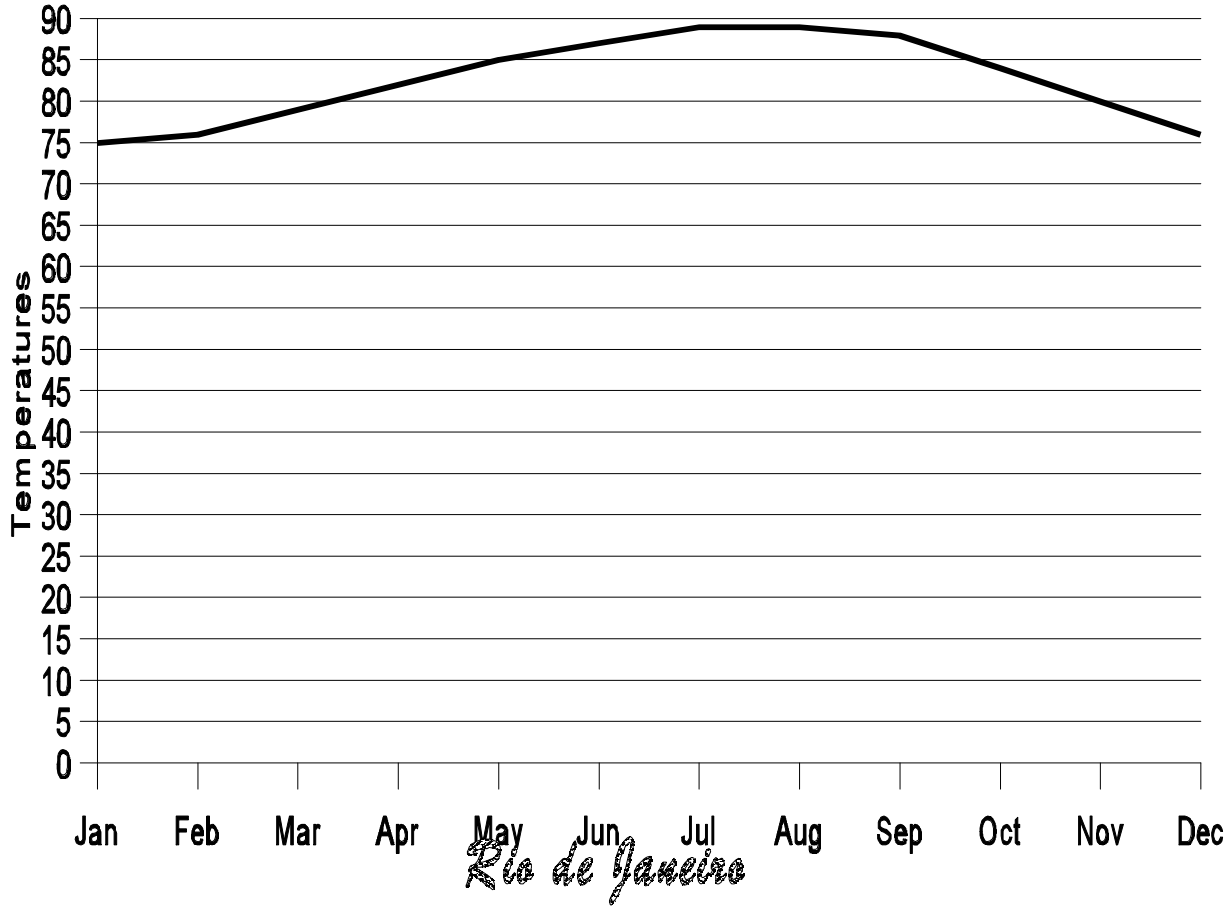
# Montreal


# Washington D. C.

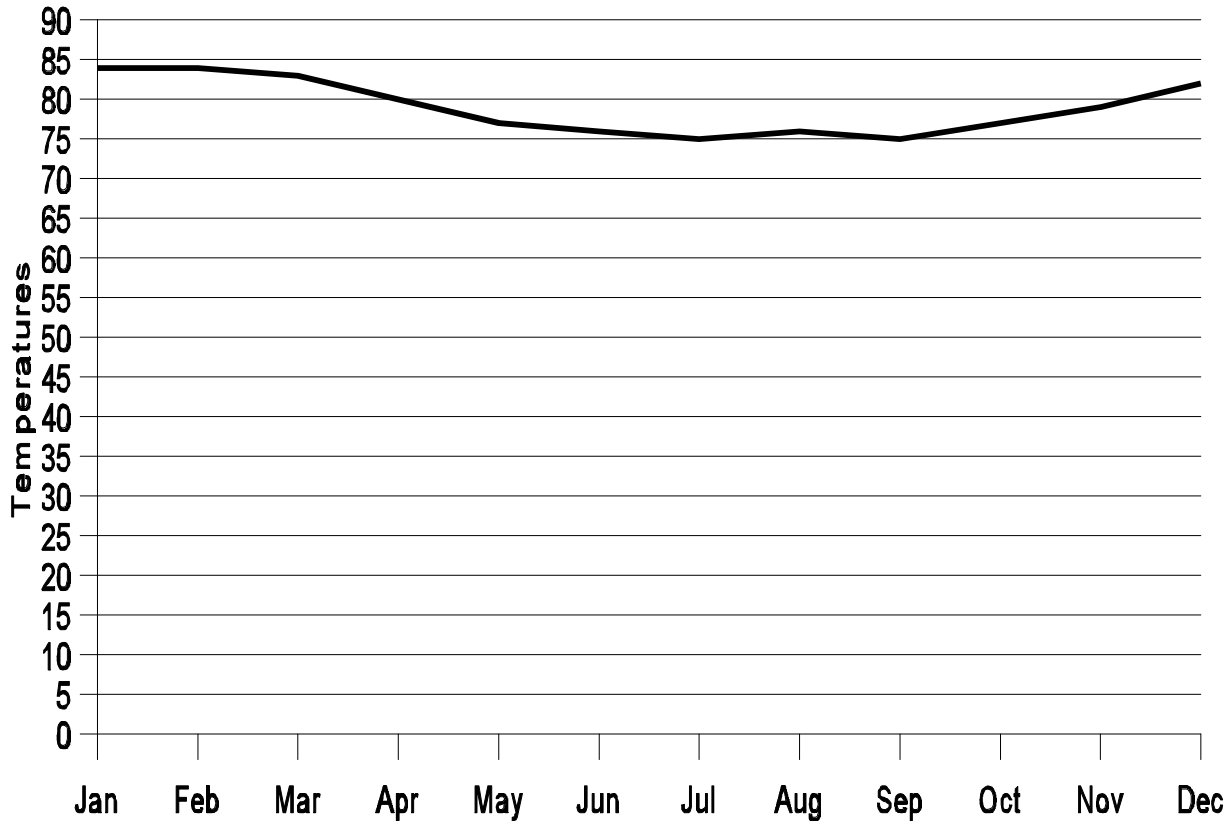


TR
#2

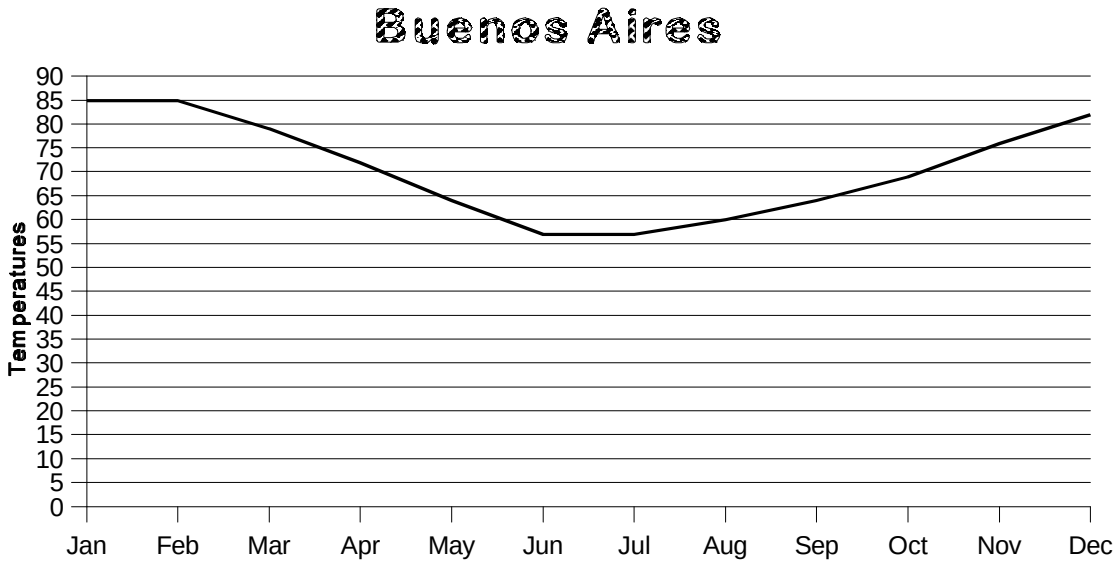
# Miami




# Rio de Janeiro



TR
#3


Buenos Aires
Temperatures
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

# Monthly Temperature Data for Selected Cities

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Montreal | 21 | 23 | 33 | | 64 | 74 | 78 | 75 | 67 | 54 | 39 | 26 |
| Wash. D.C. | 43 | 46 | 55 | 67 | 76 | 84 | 88 | 86 | 80 | 69 | 57 | 47 |
| Miami | 75 | 76 | 79 | 82 | 85 | 87 | 89 | 89 | 88 | 84 | 80 | 76 |
| Rio de Janeiro | 84 | 84 | 83 | 80 | 77 | 76 | 75 | 76 | 75 | 77 | 79 | 82 |
| Buenos Aires | 85 | 85 | 79 | 72 | 64 | 57 | 57 | 60 | 64 | 69 | 76 | 82 |

## Answers to algebraic graph questions

Q12. Buenos Aires  Q13. Montreal  Q14. Washington

Q15. Rio de Janeiro  Q16. Miami